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14 January 1959

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~~SUBJECT~~

Reports distribution  
1 - R&D lab ILLEGIB  
1 - DC-E Router  
1 - SRS 2 SOSIE 25X1  
1 ea. contract file 25X1

[redacted] 0 [redacted]

Washington, D. C.

Attention: Mr. [redacted]

25X1

Subject: Progress Reports, Submission of

25X1

Enclosure: (A) Progress Reports for the  
Month of December 1958,  
in quintuplicate

Gentlemen:

As required, Enclosure (A), described above, is submitted detailing the progress achieved during the month of December 1958.

In the event further information is desired concerning the enclosed reports, do not hesitate to contact the writer.

Very truly yours,

25X1

[redacted]  
Contract Administrator  
NKG:js

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TRANSPORTABLE INFLATABLE ANTENNA

Purpose: The scope of this project is to design, develop and test one antenna system for the 350 - 10,000 mc range and to fabricate and deliver five complete antenna systems with indoor mounts and two interchangeable outdoor mounts.

Personnel: Electrical Engineer:  25X1  
Mechanical Engineers:

Status: With reference to last month's report a logarithmically periodic structure having the following parameters was constructed:  
 $\alpha = 60^\circ$ ,  $\gamma = .707$ ,  $\beta = 10^\circ$ ,  $\psi = 45^\circ$  and with the longest element being 26 cm. in length. The low frequency limit of this structure is about 600 mc and it was tested in conjunction with a four foot dish. The data taken on this primary feed and dish can be scaled to the low frequency requirement of this project.

Impedance was measured and patterns were taken on this particular structure in free space.

The structure was placed in front of the four foot dish and data was taken for curves of relative gain versus the spacing between the structure and the surface of the dish as described in a previous report. From these curves a compromise location of the feed was found and at the present time patterns are being taken on the dish antenna to confirm that the choice of location of the feed with respect to the dish was a good one as far as side lobes are concerned.

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During the above measurements, the absolute gain of the dish was measured at 6000 and 950 mc. It was found that the gain at 6000 and 950 mc respectively was about 34.5 and 19.3 db. This demonstrates very good agreement with theoretical gain figures which are 35.5 and 19.5 db respectively.

The design of the supporting structure for the 6.5 ft. dish is nearing completion, and the majority of the drawings for the engineering model have been finished. Orders have been placed in the model shop for some of the parts; the rest of the parts will be ordered within a week.

The ring to support the inflatable bag has been redesigned. The new design will permit the use of a one-piece or two-piece type bag.

The design of the support for the 2 foot dish has been pretty well decided upon and will be designed soon. Also the two foot dish will be purchased soon.

Future Plans: The impedance of the logarithmically periodic primary feed will be measured in conjunction with the dish and any necessary impedance matching by means of a tapered line will be worked out. The horn feed for the two foot dish will be tested alone and in conjunction with the dish as soon as the horn and the dishes have been received. The support for the two foot dish will be completed as soon as possible as well as the feed support for both dishes.

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